

# Identification, distribution and status of the Forest Owlet *Athene (Heteroglaux) blewitti*

PAMELA C. RASMUSSEN and NIGEL J. COLLAR

Re-evaluation of specimen and literature evidence established that only seven study skins of the Forest Owlet *Athene (Heteroglaux) brama* were ever collected, and only between 1872 and 1884. Examination of all seven specimens elucidated numerous diagnostic characters as well as the localities at which the species was collected, and led to the species's rediscovery in November 1997. Compared to the Spotted Owlet *Athene brama*, the Forest Owlet has a faintly spotted crown and back; pale auriculars lacking a white rear border; a broad, complete dark frontal collar; no visible hind-collar; breast almost solid brown; boldly barred sides; unmarked white central lower breast, lower underparts and legs; prominently banded wings with white trailing edge; dark carpal patch on underwing; and broad, strongly contrasting tail banding with a white terminal band. Morphological characters giving the Forest Owlet a distinctive shape include its larger bill and skull; broader, less pointed wings; very short heavy legs; much larger claws; and long, heavily white-feathered toes. Records between 1884 and 1997 attributed to the Forest Owlet—an 1890 egg set, a 1914 specimen, 1950s sight records, and photographs since the 1960s—are all unacceptable, leaving the species known only from two lowland, formerly forested areas of west-central and east-central India, neither of which lies in the main range of the Satpuras. It must have been historically local in occurrence and is now probably also very rare owing to habitat loss.

## INTRODUCTION

The Forest Owlet *Athene (Heteroglaux) blewitti* (Forest Spotted Owlet or Blewitt's Owl), one of the least known endemic birds of India, was first discriminated as new by F. R. Blewitt, who collected the type specimen in December 1872 at "Busnah-Phooljan" (somewhere near Basna, on the Phuljar Highway in what is now eastern Madhya Pradesh) and sent it for description to A. O. Hume (1873). (Hume's establishment for the owl of a new genus, *Heteroglaux*, has recently been supported by the discovery of its osteological distinctness: Rasmussen and Collar ms) In February 1877, V. Ball collected the second specimen some 60 miles (100 km) south of the type locality near Karial (= Khariar), on the Udet (= Udanti) River (Ball 1877, 1878), in what is now westernmost Orissa. Then, in 1880–1883, J. Davidson collected four specimens (Ripley 1976) on the other side of the Indian peninsula, in West Khandesh, now north-western Maharashtra, although Davidson assumed the first three were merely Spotted Owlets *Athene brama* until informed otherwise by Hume, to whom he had sent his material (Davidson 1881). In 1890 an egg-set claimed to be of the Forest Owlet was said to have been taken near the type locality (Baker 1934). The only other—and most recent—specimen was purportedly obtained in 1914 at Mandvi, on the Tapti River in southern Gujarat, by R. Meinertzhagen (Ali and Ripley 1969, Ripley 1976), although we have very recently established that this bird was in fact a fifth Davidson specimen from Khandesh (in 1884) that Meinertzhagen stole from the Natural History Museum (BMNH) and relabelled with false data (Rasmussen and Collar in press). Until its rediscovery in November 1997 (King *et al.* 1998), the only subsequent reports of the Forest Owlet of which we are aware are doubtful sight

records from Bihar (Ara 1953, 1956) and photographs of single birds attributed to the species, one taken near Nagpur, Madhya Pradesh, in 1968 (Ginn 1973, Ripley 1976), and two on different occasions in Udaipur District, southern Rajasthan (Sharma and Tehsin 1994, R. H. Tehsin *in litt.* 1997).

Based on the nineteenth-century evidence, supplemented with the publication in Ali and Ripley (1969) of Meinertzhagen's record (this was when it first became widely known), the range of the Forest Owlet has been given as central India (Murray 1887, Peters 1940, Eck and Busse 1973, Day 1981, Knox and Walters 1994), 'south of the Raipur District' (D'Abreu 1935), or the entire length of the Satpura hill range (Ali 1948, Ripley 1961, Luther 1970, 1986, Ali and Ripley 1981, ZSI 1981, Clark and Mikkola 1989), including the Surat Dangs and Rajpipla hills (Khacher 1996). However, these range descriptions were very broad interpolations between the two areas from which it had been genuinely recorded (Fig. 1). The species has been considered comparatively rare (Grossman and Hamlet 1964), rare (Freethy 1992), very rare (Ripley 1976, King 1978–1979), possibly extinct (Luther 1986, Amadon and Bull 1988, Clark and Mikkola 1989, Voous 1989), probably extinct (Sibley and Monroe 1990, Grewal 1993, Kothari and Sharma 1995), and extinct (Fisher *et al.* 1969, Luther 1970, Day 1981). Indeed S. D. Ripley placed on record that he considered it already extinct (Clark and Mikkola 1989), and (*in litt.* to R. J. Clark, 5 September 1986) regarded the survival of forests within its range as highly unlikely given the human-accelerated desertification process in the region. It was accorded Critically Endangered status by Collar *et al.* (1994).

Searches for the Forest Owlet by Sálím Ali and S. D. Ripley in the Sambalpur and Tikarpara areas of Orissa (not far from the type locality) in 1975 and in Melghat

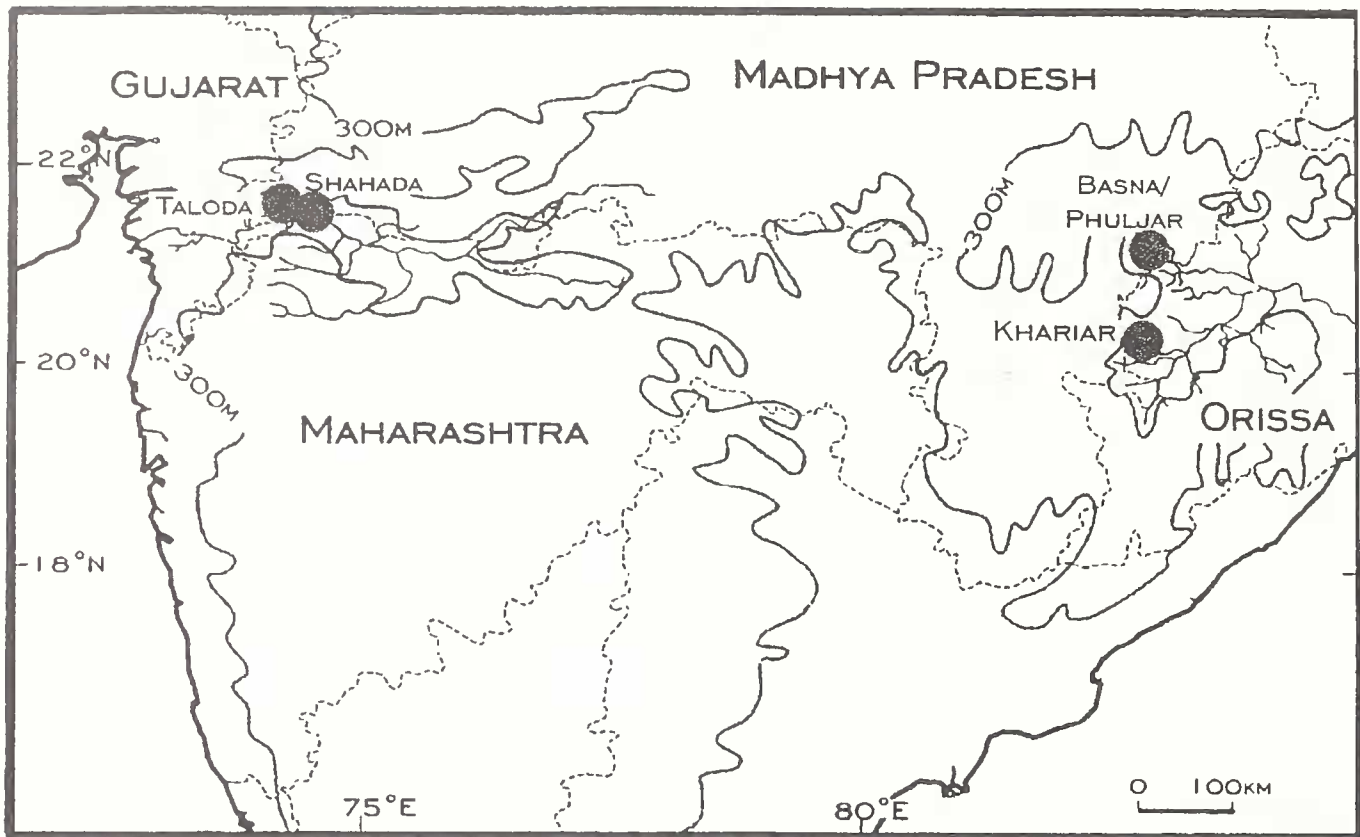


Figure 1. Map of localities from which valid specimens of Forest Owlets originate.

Tiger Reserve, Maharashtra, in 1976 (Hasan 1976) were unsuccessful (Ripley 1976). Just after leaving Melghat, Ali and Ripley also briefly visited a few areas along the Tapti River ( $21^{\circ}26'N$   $74^{\circ}25'E$ ) near Shahada, but found no forest there (Hussain 1976). Then, based on the locality of the Meinertzhagen specimen, they sent S. A. Hussain to search for the Forest Owlet at Mandvi in 1976, but again no suitable habitat was located and the result was negative (Hussain 1976, Ripley 1976, Ali 1978a), which in retrospect is not surprising given that the locality was fraudulent (Rasmussen and Collar in press). Appeals to the birdwatching public, including the distribution of black-and-white posters illustrating both Forest and Spotted Owlets (Ali 1978b), did not result in the species's rediscovery.

This last point is equally unsurprising, since twentieth-century published illustrations and descriptions of the Forest Owlet have been misleading (e.g. in Ginn 1973, Hume 1991, Erritzoe 1993) or have placed too much emphasis on the similarities of this and Spotted Owlets (e.g. in Ali and Ripley 1969, 1983, Ripley 1976). Indeed, Ali (1978a,b) described the two as 'almost identical' and 'exceedingly similar in appearance', with a 'very close superficial resemblance'. Lacking reference specimens in India, Ali (1978b) had entertained the idea that the Forest Owlet might not be a valid species, and concluded that the best way to discriminate it from the Spotted Owlet would be on habitat. Consequently we have sought to clarify the distributional and historical record of the Forest Owlet, including evaluation of twentieth-century records, and to provide plumage distinctions from the Spotted Owlet in the hope of allowing reliable field identification and hence of facilitating its rediscovery (an ambition already fulfilled: King and Rasmussen 1998). These

clarifications should now serve to further the survey and conservation work that is urgently needed. We deal with identification first here in order to establish the basis for our review of twentieth-century records.

## PLUMAGE COMPARISONS

There are seven known specimens of the Forest Owlet and it is doubtful that any unknown material exists (Rasmussen and Collar in press). We compared the plumage of all seven with hundreds of specimens of the Spotted Owlet—the entire series of Indian subcontinent specimens at the American Museum of Natural History (AMNH), Natural History Museum (BMNH), and National Museum of Natural History (USNM), and numerous other smaller collections—including representatives of each of the four recognized races. Even within each race, the Spotted Owlet presents great variability in plumage, and in most (but not all) of the characters distinguishing the two species a few individuals of the Spotted Owlet closely approach the condition of the Forest Owlet. However, these Spotted Owlets do not combine more than one or two of the Forest Owlet's identification features, and in no case was diagnosis of specimens equivocal. In fact, our examination of most of the Spotted Owlets in the world's collections has (to date) not resulted in the discovery of a single misidentified Forest Owlet specimen. The following account combines data from analysis of all seven specimens with that from PCR's field observation, videotape and photographs of two living individuals, and is complementary to field identification data presented in King and Rasmussen (1998).

### Face pattern

Both Forest and Spotted Owllets have white at the front of the face meeting the white supercilium, and encircling the eye from below (cover plate, Fig. 2). The auriculars are brown with narrow concentric bands on both, and a line of dark feathering connects them with the gape. In both the entire throat is white, bordered below by the dark collar. However, there are noticeable but apparently previously undocumented differences in face pattern: the auriculars of the Forest Owllet are paler brown than in all but the palest individuals of the Spotted Owllet, and they are not bordered from behind by white; instead the colour is smoothly confluent with that of the sides of the head. The cheeks of the Forest Owllet thus contrast little with the surrounding areas, and the face has a blander expression and is mostly paler. The Forest Owllet has a more conspicuous dark line down the centre of the face from the forehead, split by the bill. Its supercilia are straighter, and its eyes are smaller relative to its head size.

### Head and neck

The Forest Owllet has only a suggestion of the white hind-collar that is usually well developed and highly conspicuous in the Spotted Owllet (Plate). The hind-collar is not normally visible in the Forest Owllet, even when the neck is raised, as the white spots are restricted to the feather bases, whereas in Spotted Owllets the collar is comprised of nearly white feathers with dark tips.

The crown through to the hindneck of the Forest Owllet is nearly uniform dull brown, with only inconspicuous, small whitish dots, while adult Spotted Owllets have larger (hence usually conspicuous) white spots over the entire crown through hindneck. Juvenile Spotted Owllets, however, sometimes virtually lack spotting on this region, so that other plumage features must be used to confirm identification of birds with unspotted crowns. Because of its dull grey-brown colour, the crown of the Forest Owllet contrasts somewhat less with the white supercilia than in dark Spotted Owllets.

The dark brown semi-collar across the front of the neck is broader, more nearly complete, and more prominent in the Forest Owllet specimens than in most Spotted Owllets, but some of the latter are indistinguishable on this character. Also, in normal posture in the field the frontal collar is not noticeably separated from the solid brown breast of the Forest Owllet, so this is not a useful field character.

### Body plumage

The Forest Owllet has the mantle largely unspotted, while most Spotted Owllets have the mantle heavily spotted; but again some Spotted Owllets are very close to Forest Owllets in the amount of spotting on the mantle. The Forest Owllet has large central white spots on each of the scapulars, forming a prominent row of white spots bordering the wing, and very large white spots on the upperwing coverts near the leading edge of the wing, while spots are mostly lacking on other upperwing coverts; in contrast, the Spotted Owllet usually has fairly uniform spotting over all these areas.

The pattern of the underparts differs strikingly and consistently between the species. In the Forest Owllet, the sides of the breast appear almost solidly dull grey-

brown owing to the coalescing of broad bands, and the sides and flanks are prominently and broadly banded dark brown and white, although the white bands partially hide and break up the dark bands. This contrasts strongly with the pure white central underparts involving the lower breast, lower flanks, tarsal feathering and undertail coverts. The border between the dark breast patches and the white central underparts takes the form of an inverted V. In Spotted Owllets, however, the underparts appear to be much more uniformly spotted, without large pure white areas, although in a few the flanks are definitely but more narrowly barred. The Spotted Owllet lacks the prominent large dark breast patches, and the lower underparts, including the tarsal feathering, are at least vaguely mottled and sullied with brown.

The entire crown, sides of neck, and upper back of the Forest Owllet have a smooth, unicolored, and rather pallid appearance, while its lower parts present a strongly contrasting, almost black-and-white appearance, unlike the overall spotted impression given by Spotted Owllets. Although it has been stated that the Forest Owllet is darker than the Spotted Owllet (Ginn 1973), in fact many of the latter are considerably darker and warmer brown overall, lacking the contrasting appearance of the former. Spotted Owllets, which range from very pale in the north to very dark in the south, with considerable individual variation, generally show more or less one tone of brown throughout their plumage.

### Tail and wing patterns

The tail pattern is strikingly different between the species (Fig. 2), with that of the Forest Owllet broadly and boldly banded, with very dark brown and much wider white bands than those of Spotted Owllets. In addition, the Forest Owllet has a broad white terminal band except when the rectrices are heavily worn: in the lone April specimen (BMNH 86.2.1.544) the white terminal band is almost certainly completely worn off, a view strongly supported by the fact that its tail is shorter than any other specimen of the Forest Owllet by 5.4 mm, which is about the width of the white terminal bands in those specimens. The white terminal band was also missing in single birds seen in November 1997 and June 1998.

The wings of the Forest Owllet are also more strongly and broadly banded than are those of the Spotted Owllet, and in fresh plumage the contrast between the dull brown upperparts and the black-and-white appearing wings is extremely noticeable, even from a long distance. Finally, each inner primary and secondary of the Forest Owllet has a prominent white tip (Fig. 2), forming a distinct white trailing edge across these flight feathers in fresh plumage. In contrast, in Spotted Owllets the tips of the remiges are usually not discernibly or are only vaguely paler than the remainder of these feathers.

### Flight

In flight, the Forest Owllet appears strikingly contrasting from below, with a great deal of white showing conspicuously below the brown breast, the wings and tail look strongly banded black-and-white, and the wings seem very broad. This last impression conforms with our finding that the species's wingtips are not quite as pointed as in Spotted Owllet, and its inner wings are broader (Rasmussen and Collar ms). The Forest Owllet

also has a prominent blackish patch on the underwing primary coverts, while the rest of the underwing coverts are essentially unmarked white; the Spotted Owlet has underwing coverts all-white or with scattered small brown markings, concentrated in the primary coverts, but not forming an obvious blackish patch.

### Soft part colours

Blanford (1895) stated that the soft part colours of the Forest Owlet were unrecorded, although he wrote at a time when (as we conclude in Rasmussen and Collar in press) all the known specimens had already been collected. However, the following specimen data exist: 'iris bright yellow' (Sharpe 1875, from label of the type specimen), or 'pale yellow' (MCZ 236630); 'bill light yellow' (Sharpe 1875) or 'green' (MCZ 236630); 'feet whitish green' (MCZ 236630). The soft part colours given by Erritzoe (1993) are based on a misidentified photo of the Spotted Owlet (see below). In life the two individuals seen and photographed in November 1997 showed pale clear yellow irides with heavy black eyelids; pale yellow-horn bill, with cere greyer; unfeathered sides of toes appearing orange-yellow; claws dark. As far as is known the soft part colours do not help distinguish the two species.

### Shape

Study of specimens and videotape of live Forest Owlets show that their shape (detailed mensural analyses are presented in Rasmussen and Collar ms) is distinctive in several respects. The bill, although not longer, is broader and deeper than in Spotted Owlets. Their skulls are broader, giving them an exceptionally large-headed look, although it should be noted that Spotted Owlets can look big-headed when their head feathers are raised. The Forest Owlet's wingtips normally lie along about three-quarters of the length of the tail. When perched, its tail appears relatively insubstantial, narrow and short; it can be wagged energetically from side to side for lengthy periods, although usually it is held entirely still. The very short, heavy tarsi are strongly accentuated by their fluffy, heavy white feathering, and they may be partly hidden by the full white flank feathers. The great extent of white on the underparts can make the perched bird conspicuous in the sun from long distances. The large, thick, white-feathered toes and heavy dark claws are also readily discerned in the field.

## CLARIFICATION OF THE HISTORICAL AND BIOLOGICAL RECORD

### Nineteenth-century records

All nineteenth-century specimen records of the Forest Owlet are presented in Table 1, and refer to Phuljar in 1872 (Blewitt), Karial in 1877 (Ball) and Khandesh in 1880–1884 (Davidson). It is clear from Ball's itinerary as set forth in his 1880 book that "Karial" (= Khariar, Kharhial, Khariar), Orissa, is only ca. 60 miles (c. 100 km) from Busnah-Phooljan, the type locality, although it was stated by Ball (1877) himself, a geologist, to be 150 miles to the south, a previously uncorrected mistake that has been repeated by several subsequent authors, including Hume in a footnote in Davidson (1881). With

our rejection of Meinertzhagen's 1914 Gujarat record (Rasmussen and Collar in press), specimen records exist only for two points fairly close together in south-eastern Madhya Pradesh and westernmost Orissa, and in a small area of north-western Maharashtra, about 550 miles (c. 900 km) to the west (see Fig. 1).

A clutch of four eggs from the Baker Collection (BMNH 1997.3.1) was considered by Baker (1934) to pertain to the Forest Owlet. Dimensions of the eggs as measured by PCR are within 0.2 mm of those given by Baker (1934) for the same eggs; they are only slightly larger than the average egg sizes for Spotted Owlets, and only one slightly exceeds the maximum length given for Spotted Owlets by Baker (1934). According to J. M. D. Mackenzie's annotation on the clutch record card, the eggs, dated 14 March 1890, had been marked '76 quint' by the collector, P.W. Mackinnon, who had been working in forest around Sambalpur, Orissa, near the type locality of the Forest Owlet, during March and April 1890 (Baker 1934). Mackenzie (according to the clutch record card) purchased the Mackinnon collection and then, by his own testimony on the card, labelled the eggs as those of the Spotted Owlet, as he had for reference only Jerdon (1862–1864), which was published prior to the description of the Forest Owlet; only later did Mackenzie realize that '76 quint' was Hume's (1879) catalogue number for the Forest Owlet, but in the meantime he had written for some reason on the label 'No locality, probably Dehra Dun or Mussoorie' (both now in Uttar Pradesh). Given that even the locality is not definite; that there is no substantiation in the form of an adult specimen or affirmation from the collector relating to the identification; that, even if it had been collected near the type locality, the chances remain high of its being from the far commoner Spotted Owlet; and that Baker is known to have altered data and combined clutches (Parker 1970), the authenticity of these eggs must be considered too doubtful for acceptance.

**Table 1.** Data for all known Forest Owlet specimens.

Specimen no./ collector	Sex	Date	Locality
BMNH 86.2.1.543 F. R. Blewitt	F	14 Dec. 1872	Phuljar, M.P., 21°13'N 82°51'E
NMI 2902.1887 V. Ball	M	8 Feb. 1877	Khariar, Orissa, 20°17'N 82°46'E
BMNH 86.2.1.546 J. Davidson	M	5 Dec. 1880	Taloda, Khandesh, Maharashtra, 21°32'N 74°11'E
AMNH 265227 J. Davidson	M	5 Dec. 1880	Khandesh [Taloda inferred from date]
BMNH 86.2.1.544 J. Davidson	F	20 Apr. 1881	Shahada, Khandesh, Maharashtra, 21°32'N 74°30'E
MCZ 236630 J. Davidson	F	5 Dec. 1883	Rapapur, Taloda, Khandesh
BMNH 1925.12.23.958 J. Davidson	M	4 Dec. 1884	Taloda, Khandesh

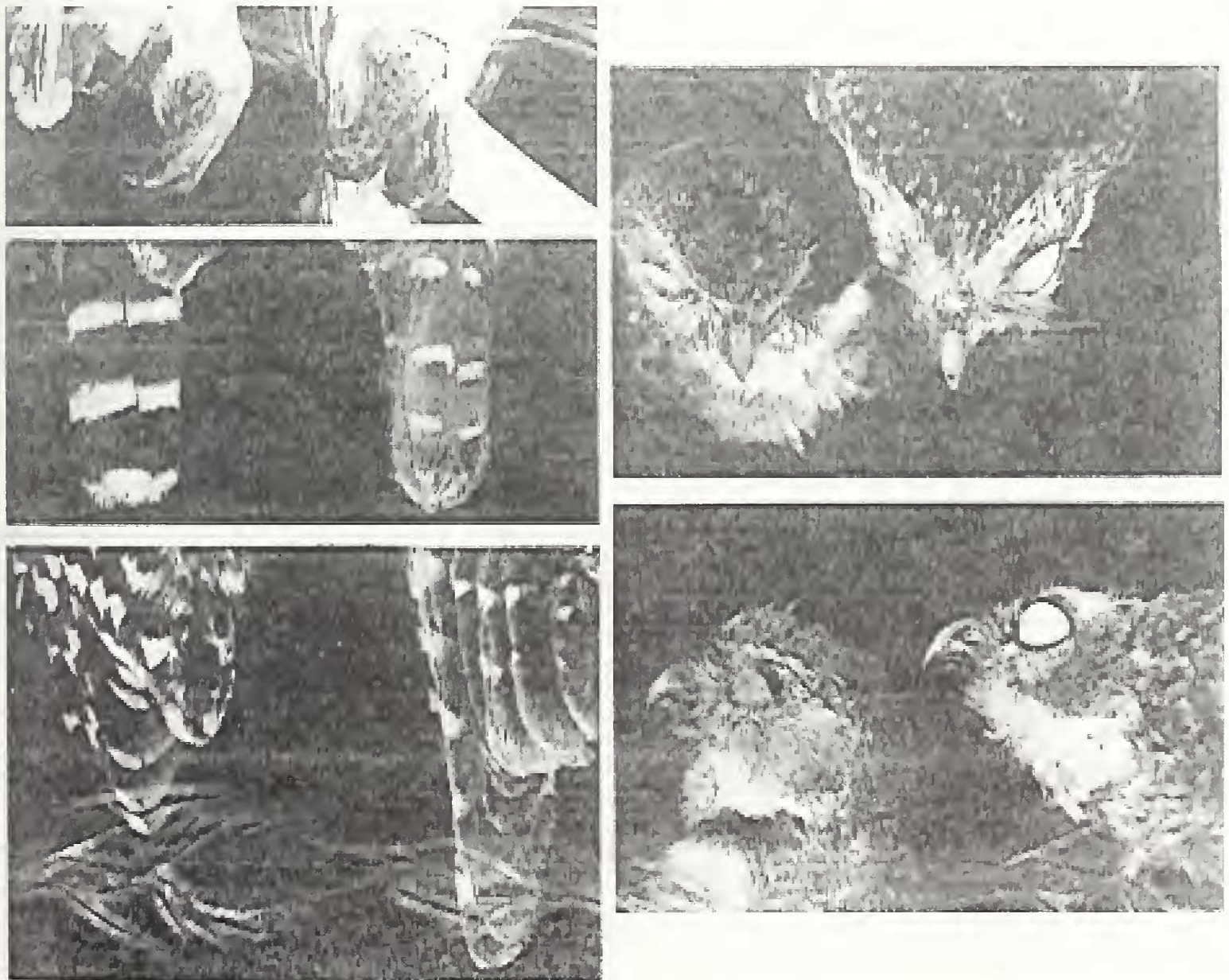
### Twentieth-century sight records

A photograph published in Ginn (1973: 167) as a Forest Owlet has been the source of considerable confusion. S. D. Ripley (*in litt.* to S. Ali, 14 April 1975) was immediately sceptical, noting that by 'taking a

magnifying glass and looking rather carefully at the photograph, I am convinced that it is yet again... *Athene brama*'. However, in his subsequent review of the Forest Owllet (Ripley 1976) he repeated the claims of the photographers, G. and A. Grandjean, who stated that the photograph was taken near Nagpur in 1968 and that the individual in question was 'uniformly darker in appearance than *Athene brama* without visible spotting on the head, and that it presented a more lively and wilder appearance than *brama*'. Despite Ripley's (1976) cautious statement that 'certain identification of this bird as *A. blewitti* is difficult', he was later much less sceptical (Ripley 1982), and subsequently this record has often been mentioned as probable (Mountfort 1988, Clark and Mikkola 1989, Collar *et al.* 1994), or implied to be definite (Hume 1991, Erritzoe 1993). However, examination of the photo reveals that the bird in question has abundant, distinct pale spotting on the forehead; dark auriculars with a pale rear border; an incomplete frontal collar; mottled breast sides; flanks more spotted than barred; no large white areas on central underparts; a pale brown overall colour; and numerous spots on

visible wing coverts. All these are typical characters of Spotted but not Forest Owllets, and we therefore unhesitatingly reject this record.

There is an undated report of the Forest Owllet from secondary jungle at Goilkera, Singhbhum District, southern Bihar (Ara 1953), and later (Ara 1956) a report of its occurrence in Singhbhum Valley Sal forest, Forest type B2c of Champion (1936), although it is not clear whether the latter was intended to represent a different record from the former. Ara (1956) also furnished a description of the vocalizations of the Forest Owllet ('chuckles similar to the spotted owllet, a double note *zi-gwet* and many others'), but gave no indication whether this was an original observation, and the *zi-gwet* cannot be said to differ materially from the *cheevak* described for one of the Spotted Owllet's calls (Ali and Ripley 1983), whereas subsequent fieldwork has determined that the calls of the Forest Owllet are very different (PCR and F. Ishtiaq pers. obs.). No documentation was provided to enable evaluation of Ara's sight records, and it seems that she was unaware of the extreme rarity of the Forest Owllet and the lack of



**Figure 2.** Comparison of external structural and plumage characters between Forest (on left of each pair) and Spotted (right) Owllets. Top left, feathering of toes and claw size; middle left, uppertail surface; lower left, tips of primaries and secondaries; upper right, crown spotting and culmen ridge width; lower right, pattern of auriculars.

previous Bihar or recent records. Considering these points and the lack of useful information available at the time on field identification of the Forest Owlet, we regard Ara's Bihar Forest Owlet records as inadmissible.

A record (fortunately supported by filed photographs) tentatively considered to be of the Forest Owlet, from the Phulwari Ki Nal Wildlife Sanctuary in southern Rajasthan, has recently been published (Sharma and Tehsin 1994). These authors showed their photographs of two separate individuals to J. C. Daniel, S. N. Satheesan and Sálím Ali (Sharma and Tehsin 1994), and to S. A. Hussain and H. Abdulali (R. H. Tehsin *in litt.* 1997), all of whom indicated uncertainty as to the identity, as specimens of the Forest Owlet are lacking in India. On request Tehsin kindly sent us a copy of his photo of a trapped bird and three photos of another bird taken at the same location two years previously. The trapped bird, which is the basis for the putative record in Sharma and Tehsin (1994), clearly shows abundant whitish spotting on the forehead, and is an unequivocal Spotted Owlet. The more distant photos of the free bird from the same locality show an individual with no visible crown spotting but which on other features is clearly a dark-cheeked juvenile Spotted Owlet.

A photograph in Rasmussen (1998) of a pair of owlets and one of their young that had fallen from the nest in Amravati District, Maharashtra, in October 1997 was captioned in an editorial sidebar as possibly depicting Forest Owlets. However, examination of the original and two further photographs has established that the birds are Spotted Owlets with relatively little crown spotting.

We therefore find that, until November 1997, there were no acceptable twentieth-century records of the Forest Owlet: the last time the species had definitely been found was the occasion in December 1884 when Davidson collected the specimen later stolen by Meinertzhagen. Thus until very recently all our knowledge of the species in the wild stemmed from a 13-year period well over a hundred years ago.

### Putative range

Meinertzhagen's fraud wasted several people's time and resources in the past 25 years, and to some degree it compromised an understanding of the true range of the Forest Owlet, since his chosen site, Mandvi, is c. 100 km west of Khandesh and the only record for Gujarat or from near sea-level (Fig. 1). Despite the low elevation (<100m ASL) of the town, the specimen supposedly from Mandvi is the only basis for statements that the Forest Owlet occurs in the Surat Dangs (Ali 1978a, Suresh Kumar 1985, Khacher 1996), a small hill range to the south of the Tapti River. It must have fuelled the notion that the species's distribution extends throughout the Satpuras; indeed, Mandvi may have been chosen to conform roughly with that judgement, in print repeatedly since Ali (1948). However, it does not follow from the evidence, with or without Mandvi, that such a range is a reasonable inference. None of the areas from which the species has been collected is in the main range of the Satpuras, although the Khandesh localities are in their westernmost sector, the Akrani Range. In fact, Davidson (1881), who collected five and saw a number of others (see below), plainly stated 'I do not think they are found in the Akrani or higher Satpuras...' and that

his birds came from 'below the Satpuras' (our emphasis). Although (as we show below) all known collection sites for the Forest Owlet are in the lowlands between 150 and 500 m, and the rediscovery site is in the lowest foothills (460 m: King and Rasmussen 1998), the above misinterpretation of its range has even resulted in statements that it is a species of mountainous areas (ZSI 1981, Suresh Kumar 1985, Sibley and Monroe 1990). Ironically, just after the description of the Forest Owlet, Ball (1874) declared that it should be looked for on the Chota Nagpur plateau (just north of the type locality), but failed to find it there himself, only later procuring it well to the south at a lower elevation.

Thus, while the species might well occur along the Satpuras in the intervening areas between north-west Maharashtra in the west and eastern Madhya Pradesh and Orissa in the east, it is at least as plausible to assume that it has a highly local, disjunct distribution in the forested lowlands of the north-western part of the Indian peninsula, and in the lower parts of the hills of Orissa and eastern Madhya Pradesh. No other bird species is endemic to the Satpura Range, which supports forest types at least previously widely distributed elsewhere in the subcontinent, and which has been postulated as being an important dispersal corridor (Ali 1949; but see Dilger 1952). On the other hand, highly and apparently inexplicably disjunct ranges are not unknown for other birds of the Indian subcontinent, for example the White-naped Tit *Parus nuchalis*, which occurs only in north-western and southern India, but not in apparently suitable intervening habitat.

### Natural history and status

Most of the little information we have on the natural history of the Forest Owlet is from Davidson (1881), who collected his first three birds without realizing they were not Spotted Owlets, and retrospectively remarked: 'All were shot in the heavy jungle below the Satpuras, and all were shot late in the morning sitting alone on the tops of thin trees. ... They are not uncommon in this dense jungle, and I have repeatedly seen others sitting on exposed trees'. Two years later he obtained his fourth specimen, and the fifth the year after that (coincidentally four of the five were obtained on 4/5 December in three different years—see Table 1). His unpublished notes somewhat amplify the record: 'This bird is restricted in Khandesh as far as I know to the belt of heavy jungle on the plains along the south side of the Satpuras, and there it is not common. Its habits are peculiar as all the specimens I have found have been sitting in bare trees high up. I have found them sitting as late as 10 in the morning with the sun full upon them' (Davidson ms a). He also 'obtained a specimen I take to be this at Rapapur, Taloda on 5/12/83. It was at 8 in the morning sitting in the sun on a bare tree. I think I saw a pair of this near Futtepur [= Phatepur?] but am not sure as they were wild. I saw none on 2/12/84 though I traversed all those jungles' (Davidson ms b). It is frustrating that, while he remarked on the collection of his fourth specimen here, he failed to remark on his fifth (at least in the archived mss), making an entry in his notes about his failure to find the species a mere two days before he again did so (and writing about this failure in the past tense, hence presumably either the evening of 2 December or the following day).

Hume (1873) stated that, according to Blewitt, the Forest Owlet 'frequents the densest forests of the western portion of the Tributary Mehals, and is shy to a degree.' One meaning of 'mehaul', 'mahall' or 'mehal' is a parcel of land (Yule and Burnell 1968), and 'Tributary Mehals' was a term for the area including the type locality, Busnah-Phooljan. Although this exact locality is unclear, it must have been near present-day Garh Phuljar, Basna (21°16'N 82°50'E), which is on the Phuljar Highway, and the Phuljar Hills (maximum elevation 700 m); the minimum elevation in the area is c. 200 m. Landsat images from ca. 1978 show sizeable forest patches in hills well to the north of Basna and Saraipalli, and to the east of the Phuljar Hills, but very little significant plains-level vegetation remained even then.

When Ball collected his Forest Owlet (the second specimen) on 8 February 1877, he must have been in the Khariar region at Gondabahali (20°07'N 82°40'E) near what is now called the Udanti River, or as much as seven miles to the west, at Nilji (20°12'N 82°35'E), according to the itinerary in Ball (1880: 592–593). Oddly, Ball (1880) does not mention his collection of the species, although a number of other birds he obtained are discussed and he was well aware that his was only the second specimen of the Forest Owlet, which he had earlier called 'the most interesting bird in my collection' (Ball 1877). The topography of the Kharhial region is varied, with a large plateau to the west and smaller hills to the east reaching about 1,000 m elevation locally. Ball (1880) mentioned an isolated 10 mi<sup>2</sup> patch of teak near this area, and such a patch is shown just west of Gondabahali on a 1917 Survey of India map (based on surveys dating from 1859 to 1866), but most of the area was then 'general jungle' and the Forest Owlet was shot during the day in a mango grove along the river bank—since Ball (1877) called it a grove, it was probably not 'wild mango', as given in Ripley (1982) and subsequent authors, but a planted cultivar (J. Kress verbally 1997) which when long abandoned forms a forest-like habitat; nor would it have been a 'mango swamp' (Freethy 1992). Because it was along the river, the elevation of the collection site cannot have been more than 150–300 m (according to U.S. Corps of Engineers Map, Ed. 9-AMS, Series 1301). Again, Landsat images from ca. 1978 show no plains-level forest near Gondabahali, but considerable forest remains in the hills. Mango groves still exist in the Gondabahali area along the river, according to the Kharhial DFO, Mr Mishra (verbally 1997).

Whether the Forest Owlet is closely linked to watercourses, as repeatedly stated in the literature (Ali and Ripley 1969, Ripley 1982, Hume 1991, Collar *et al.* 1994), remains unclear, for while all known sites are from forest on river systems, only Ball's specimen was definitely collected along a river. There is no indication that Blewitt's type was collected near a river, nor is there evidence from Davidson's writings that any of his five specimens and additional sight records were found along streams or rivers, and Barnes (1888: 223) declared that Davidson found the Forest Owlet 'in the plains jungle, north of the Tapti'. On the other hand, Davidson's 'Shada' (= Shahada) lies on a tributary (the Gomai River) of the Tapti (although it is not clear exactly where the specimen was collected), Taloda is only three miles north of the Tapti, and Rapapur lay in a clearing by a

stream debouching from hilly country; even the only Phatepur we can trace in Khandesh (assuming it is Davidson's Futtepur) is on a tributary (the Vaki River) of the Tapti (all locations determined from Survey of India four-inch maps prepared in the 1870s). The 1997 rediscovery site near Shahada was on a dry hillside not far from a small stream (King *et al.* 1998).

Our unexpected findings of significant osteological differentiation of the Forest Owlet from the Spotted Owlet and other *Athene* species (Rasmussen and Collar *ms*) suggested that the Forest Owlet might well not behave or vocalize similarly to the Spotted Owlet, and this has subsequently been confirmed (PCR and F. Ishtiaq pers. obs.). This could partially account for Ripley and Ali's lack of success in finding the species in Orissa and Maharashtra, as they were using tape playback of Spotted Owlet calls (Anon. 1976, Ripley 1976, Ali 1978a).

Hume (1873) referred to the type being collected only 'after long effort', which could imply the species's rarity even in those days, although it also suggests that Blewitt may have seen more than one individual. However, Hume also referred to the birds as being, in Blewitt's estimation, 'shy to a degree', which we assume means 'extremely shy', and thus the 'long effort' expended in obtaining the type would appear to reflect habit rather than status. On the other hand, Davidson (see above) called the species both 'not common' and 'not uncommon'; moreover, he found the birds to exhibit a behaviour (perching in daylight in bare trees) diametrically opposite to one which would render their collection difficult. It is therefore plainly impossible to deduce anything conclusive from the notes of the few who ever encountered this species in the nineteenth century.

The fact that a bird we now know to be distinctive in appearance, as well as strongly diurnal, often highly visible, and at least sometimes confiding, had only ever been collected on six occasions over a century ago and at only five sites in a relatively well-known area such as central India, suggests that it must historically have been of extremely local occurrence, if not exceptional rarity. Several collections have been made by competent ornithologists and numerous observational surveys conducted in areas relatively near or between the known Forest Owlet sites (including Balaghat, Bastar, Betul, Bheraghat, Chhota Nagpur, Dhamtari, Dhenkanal, Dhulia, Hoshangabad, Kanha, Koraput, Melghat, Mhow, Nagpur, Narbada Valley, Nasik, Nawapara, Pachmarhi, Rajpipla Hills, Sagar, Sambalpur, Sehore, Surat Dangs, Tikarpara, etc.) without finding any and, as we have never located a misidentified specimen, we find it difficult to believe that we are dealing with an overlooked species that is actually common and widespread. However, we have found no evidence that up to November 1997 any ornithologist ever visited forest very near any of the known collection sites; the closest approach seems to have been that of Ali and Ripley in 1976 along the Tapti River (Hussain 1976), but the entire area they visited was deforested.

Although we now know at least that the Forest Owlet is not extinct, it is imperative and urgent that extensive studies and surveys be conducted to determine its true range, status and conservation requirements. As yet we know of only one site, in the lower Akrani hills, at which

it survives (King and Rasmussen 1998), but at least some forest similar to that at the rediscovery site still occurs in the hills north of Taloda (PCR pers. obs.), and since four of Davidson's specimens are from that area it seems likely still to occur there. However, Davidson (1881), who had more experience with this bird than anyone else, clearly stated he did not think it occurred in the Akrani, as he had only found it in plains forest. His statements imply that he had worked in these hills without finding the species there, and this suggests that its occurrence in the lower Akrani may be a recent or very patchy phenomenon. If the former, it would seem to be a result of the now-total clearance of plains-level forest between the hills and the Tapti River, demonstrated by 20-year-old Landsat images, and confirmed by M. Pokyim (verbally 1997, 1998). The elevational requirements of this species remain to be determined; if it can survive in forest higher than 500 m then there would seem to be considerable areas of apparently suitable habitat remaining in the Akrani; if not, then it may be just hanging on in suboptimal habitat. However, if it can survive in mango groves (in which it was once collected), at least this habitat should persist.

Now that we have a clearer profile of the field characters that distinguish Forest and Spotted Owlets, we urge that individuals and institutions within India, as well as visiting birdwatchers, search in the known sites and adjacent areas, first simply for tracts of forest and then of course for the rare owlet they may contain. Since even negative results—or the discovery of an area of forest even if no owlet is immediately encountered—can help focus research, it would be helpful if all such data could be reported to NJC, who will pass the information to appropriate sources within India.

We are very grateful to Larry McQueen for the portrait that accompanies this paper (cover). Access to collections, additional information and/or other assistance was provided by B. F. King, M. LeCroy and P. Sweet, American Museum of Natural History (AMNH); M. Adams, R. P. Prÿs-Jones, M. P. Walters and F. E. Warr, The Natural History Museum, Tring, U.K. (BMNH); A. Rahmani and M. Alam, Bombay Natural History Society; F. Ishtiaq, Aligarh Muslim University; J. B. Thomsen, Conservation International; Mr Mishra, Khariar Forest Department; R. A. Paynter, Jr. and A. Pirie, Museum of Comparative Zoology (MCZ), Harvard University; M. D. Gottfried, Michigan State University; M. Holmes, National Museum of Ireland (NMI); M. Pokyim, North Dhule Forest Division, Shahada; B. M. Beehler, Counterpart Foundation; D. F. Abbott; K. Kazmierczak; G. R. Graves, J. Kress, B. M. McPhelim, S. L. Olson and R. L. Zusi, National Museum of Natural History (USNM); A. Johnston, Center for Earth and Planetary Studies, National Air and Space Museum; and the staff of the SI Archives, Smithsonian Institution. Photos were taken by H. Taylor, BMNH Photo Unit, and C. Hansen, USNM Photo Services. A. Pittie generously provided us with a copy of his draft account for the Asian Red Data Book. The map was made by A. P. Rayner, BirdLife International. R. H. Tehsin helpfully sent information and his photos of *Athene* owlets and S. K. Sharma provided further information; B. Sahgal kindly sent K. Rithe's photographs for scrutiny. Funding for PCR's travel to museums and to search for the owlet was provided by the Research Opportunities Fund of the National Museum of Natural History, and by British Airways, through M. Sitnik and T. Shille, Office of Biodiversity Programs, Smithsonian Institution.

**Plate (see front cover):** Forest Owlets *Athene blewitti* (above) and Spotted Owlets *A. brama* (below, with a dark individual on the left, a paler individual in the centre and a juvenile on the right). Original painting by Larry McQueen.

## REFERENCES

- Ali, S. (1948) The Gujarat Satpuras in Indian ornitho-geography. *Gujarat Res. Soc. Monogr.* No. 2: 1–11.
- Ali, S. (1949) The Satpura trend as an ornithological highway. *Proc. Natn. Acad. Sci. India* 15: 379–386.
- Ali, S. (1978a) Mystery birds of India, 3: Blewitt's Owl or Forest Spotted Owlet. *Hornbill* 1978 (Jan.–Mar.): 4–6.
- Ali, S. (1978b) President's letter. *Hornbill* 1978 (Jul.–Sep.) No. 8: 3–4.
- Ali, S. and Ripley, S. D. (1969) *Handbook of the birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon*, 3. *Stone curlews to owls*. First edition. Bombay: Oxford University Press.
- Ali, S. and Ripley, S. D. (1981) *Handbook of the birds of India and Pakistan*, 3. *Stone curlews to owls*. Revised edition. Bombay: Oxford University Press.
- Ali, S. and Ripley, S. D. (1983) *A pictorial guide to the birds of the Indian subcontinent*. Delhi: Oxford University Press.
- Amadon, D. and Bull, J. (1988) Hawks and owls of the world: a distributional and taxonomic list. *Proc. West. Found. Vert. Zool.* 3: 295–357.
- Anon. (1976) Salim Ali wins new honors, attends birders' conference with Dillon Ripley. *Span* 17(4): 45.
- Ara, J. (1953) Field notes on the birds of the Kolhan Forest Division (Singhbhum District, Bihar). *J. Bengal Nat. Hist. Soc.* 26: 9–20, 56–67.
- Ara, J. (1956) Birds of the Bihar forests—I. *J. Bengal Nat. Hist. Soc.* 28: 7–15, 90–98.
- Baker, E. C. S. (1934) *The nidification of birds of the Indian Empire*, 3. *Ploceidae–Asionidae*. London: Taylor and Francis.
- Ball, V. (1874) On the avifauna of the Chutia (Chota) Nagpur Division, S.W. frontier of Bengal. *Stray Feathers* 2: 355–440.
- Ball, V. (1877) Notes on birds observed in the region between the Mahanadi and Godavari rivers. *Stray Feathers* 5: 410–420.
- Ball, V. (1878) From the Ganges to the Godavari. On the distribution of birds, so far as it is present known, throughout the hilly region which extends from the Rajmehal Hills to the Godavari valley. *Stray Feathers* 7: 191–235.
- Ball, V. (1880) *Jungle life in India, or the journeys and journals of an Indian geologist*. London: Thos. de la Rue and Co.
- Barnes, H. E. (1888) Nesting in western India. *J. Bombay Nat. Hist. Soc.* 3: 205–224.
- Blanford, W. T. (1895) *Fauna of British India, including Ceylon and Burma*, 3. London: Taylor and Francis.
- Champion, H. G. (1936) *A preliminary survey of the forest types of India and Burma*. Delhi: Manager of Publications.
- Clark, R. J. and Mikkola, H. (1989) A preliminary revision of threatened and near-threatened nocturnal birds of prey of the world. Pp. 371–388 in B.-U. Meyburg and R. D. Chancellor (eds.) *Raptors in the modern world*. London: World Working Group on Birds of Prey.
- Collar, N. J., Crosby, M. J. and Stattersfield, A. J. (1994) *Birds to watch 2: the world list of threatened birds*. Cambridge, U.K.: BirdLife International (Conservation Series no. 4).
- D'Abreu, E. A. (1935) A list of the birds of the Central Provinces. *J. Bombay Nat. Hist. Soc.* 38: 95–116.
- Davidson, J. (ms a) Notes on the birds of Khandeish and Nasik. Unpublished manuscript in BMNH Archives, Tring, U.K.
- Davidson, J. (ms b) Notes on Khandeish birds. Unpublished manuscript in BMNH Archives, Tring, U.K.
- Davidson, J. (1881) Rough list of the birds of western Khandesh. *Stray Feathers* 10: 279–327.
- Day, D. (1981) *The doomsday book of animals*. London: London Editions.
- Dilger, W. C. (1952) The Brij hypothesis as an explanation for the tropical faunal similarities between the Western Ghats and the Eastern Himalayas, Assam, Burma and Malaya. *Evolution* 6: 125–127.
- Eck, S. and Busse, H. (1973) *Eulen, die rezenten und fossilien Formen*. Die Neue Brehm-Bücherei, no. 469. Wittenberg Lutherstadt: A. Ziemsen-Verlag.



- Erritzoe, J. (1993) *The birds of CITES and how to identify them*. Cambridge: Lutterworth Press.
- Fisher, J. (1960) Bird species in danger of extinction. *International Zoo Yearbook* 2. London: Zoological Society of London.
- Fisher, J., Simon, N. and Vincent, J. (1969) *The red book: wildlife in danger*. London: Collins.
- Freethy, R. (1992) *Owls: a guide for ornithologists*. Hildenborough, Kent, U.K.: Bishopsgate Press.
- Ginn, H. (1973) Little, pygmy and elf owls. Pp. 164–185 in J. A. Burton, ed. *Owls of the world, their evolution, structure and ecology*. London: Peter Lowe.
- Grewal, B. (1993) Birds of India. *Sanctuary (Asia)* 13(6): 15–25.
- Grossman, M. L. and Hamlet, J. (1964) *Birds of prey of the world*. London: Cassell and Co.
- Hasan, N. (1976) Naturalist on trail of a lost owl. *Hindustan Times* 9 February 1976: 1, 6.
- Hume, A. O. (1873) Novelties. *Stray Feathers* 1: 464–483.
- Hume, A. O. (1879) A rough tentative list of the birds of India. *Stray Feathers* 8: 73–150.
- Hume, R. (1991) *Owls of the world*. Limpsfield, Surrey: Dragon's World.
- Hussain, S. A. (1976) Mandvi, Surat Gujarat. 19.4.'76 to 21.4.'76. Unpublished report, Smithsonian Institution Archives, Record Unit 7008.
- Jerdon, T. C. (1862–1864) *The birds of India*, 1–2. Calcutta, published by the author.
- Khacher, L. (1996) The birds of Gujarat—a Salim Ali Centenary year overview. *J. Bombay Nat. Hist. Soc.* 93: 331–373.
- King, B. F. and Rasmussen, P. C. (1998) The rediscovery of the Forest Owllet *Athene (Heteroglaux) blewitti*. *Forktail* this issue.
- King, W. B. (1978–1979) *Red data book: Aves*. Second edition. Morges, Switzerland: International Union for Conservation of Nature and Natural Resources.
- Knox, A. G. and Walters, M. P. (1994) *Extinct and endangered birds in the collections of The Natural History Museum*. Tring, U.K.: British Ornithologists' Club (Occas. Publ. No. 1).
- Kothari, A. and Sharma, N. (1995) India's avifauna: how bleak is the future? *Sanctuary (Asia)* 15(6): 14–27.
- Luther, D. (1970) *Die ausgestorbenen Vögel der Welt*. Die Neue Brehm-Bücherei no. 424. Wittenberg Lutherstadt: A. Ziemsen-Verlag.
- Luther, D. (1986) *Die ausgestorbenen Vögel der Welt*. Die Neue Brehm-Bücherei no. 424. Second edition. Wittenberg Lutherstadt: A. Ziemsen-Verlag.
- Moulton, E. (ms) The contributions of Allan O. Hume to the scientific advancement of Indian ornithology. Unpublished manuscript.
- Mountfort, G. (1988) *Rare birds of the world*. London: Collins.
- Murray, J. A. (1887) A rough distribution table of the birds of British India and its dependencies. *Indian Annals Mag. Nat. Hist.* 1: 1–8.
- Parker, S. (1970) Review of "Handbook of the birds of India and Pakistan, v. 1, divers to hawks". *Emu* 70: 37.
- Peters, J. L. (1940) *Check-list of birds of the world*, 4. Cambridge, Mass.: Harvard University Press.
- Rasmussen, P. C. (1998) In search of the Forest Spotted Owllet. *Sanctuary (Asia)* 18(2): 22–25.
- Rasmussen, P. C. and Collar, N. J. (in press) A major specimen fraud in the Forest Owllet *Heteroglaux (Athene auct.) blewitti*. *Ibis*.
- Rasmussen, P. C. and Collar, N. J. (ms) Systematics of the Forest Owllet *Heteroglaux (Athene) blewitti*.
- Ripley, S. D. (1952) Vanishing and extinct bird species of India. *J. Bombay Nat. Hist. Soc.* 50: 902–906.
- Ripley, S. D. (1961) *A synopsis of the birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon*. First edition. Bombay: Bombay Natural History Society.
- Ripley, S. D. (1975) Letter to S. Ali, 14 April 1975. Smithsonian Institution Archives, Accn. 92-063, S. Dillon Ripley Papers.
- Ripley, S. D. (1976) Reconsideration of *Athene blewitti* (Hume). *J. Bombay Nat. Hist. Soc.* 73: 1–4.
- Ripley, S. D. (1982) *A synopsis of the birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan, Bangladesh and Sri Lanka*. Revised edition. Bombay: Bombay Natural History Society.
- Ripley, S. D. (1986) Letter to R. J. Clark, 5 September 1986. Smithsonian Institution Archives, S. Dillon Ripley Papers.
- Sharma, S. K. and Tehsin, R. (1994) Birds of southern Rajasthan. *Newsletter for Birdwatchers* 34: 109–113.
- Sharpe, R. B. (1875) *Catalogue of the birds in the collection of the British Museum*, 2. Striges. London: British Museum.
- Sibley, C. G. and Monroe, B. L. (1990) *Distribution and taxonomy of birds of the world*. New Haven: Yale University Press.
- Suresh Kumar, T. (1985) *The life history of the Spotted Owllet (Athene brama brama, Temminck) in Andhra Pradesh*. Hyderabad, India: Raptor Research Centre, Monograph Publication No. 4.
- Voous, K. H. (1989) *Owls of the Northern Hemisphere*. Cambridge, Mass.: MIT Press.
- Yule, H. and Burnell, A. C. (1968) *Hobson-Jobson. A glossary of colloquial Anglo Indian words and phrases, and of kindred terms, etymological, historical, geographical and discursive*. Second edition. Calcutta: Rupa and Co.
- Zoological Survey of India (ZSI) (1981) *Rare and endangered animals of India*. Zoological Survey of India, Calcutta: issued by the Director (on the occasion of the Third Meeting of the Conference of the Parties of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, New Delhi, 25 February–8 March 1981).

**Plate** (see front cover). Forest Owllets *Athene blewitti* (above) compared with Spotted Owllets *A. brama* (below; left is a dark individual, centre a pale one, right a juvenile). Original watercolour painting by Larry B. McQueen.

Pamela C. Rasmussen, Division of Birds, NHB Room 336, MRC 114, Smithsonian Institution, Washington, D.C. 20560-0131, U.S.A.

Nigel J. Collar, BirdLife International, Wellbrook Court, Girton Road, Cambridge CB3 0NA, U.K.